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Descriptive (under ten-word) project title

A collaborative logistics platform to increase freight efficiency while reducing emissions.

Location of Project

Konnect Kloud will service import and export container shipments transitioning through the Port of Oakland. The most frequent origins/destinations for Port of Oakland containers are the following counties: Alameda, Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Inyo, Kings, Lake, Madera, Marin, Mariposa, Mendocino, Merced, Mono, Monterey, Napa, Nevada, Placer, Sacramento, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Sierra, Solano, Sonoma, Stanislaus, Sutter, Tulare, Tuolumne, Yolo, and Yuba.

Executive Summary of Project

A shipping container will spend 56% of its life empty due to current supply chain practices which results in millions of unproductive “empty” truck miles to service import and export cargo. As shown in Figure 1, for each full container delivered to an importer, an empty container is returned to a port. Conversely, an empty container must be trucked from a port to an exporter in order for it to be filled and returned to that port. This antiquated system costs the intermodal industry $16 billion annually in unproductive truck trips simply to reposition empty containers.

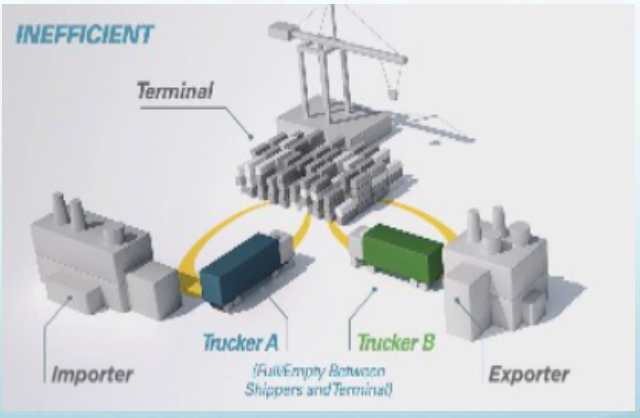

Figure 1: *The current practice of import and export container deliveries creates unproductive empty miles for each container entering and leaving a port terminal.*

To address this systematic inefficiency, Konnect Kloud has created a solution to eliminate empty truck miles from the freight system that improves the efficiency of freight movements while also providing substantial emission reductions. As shown in Figure 2, by using a collaborative logistics system, the Konnect Kloud platform allows exporters to utilize empty import containers in the field to return them to the port loaded with an export shipment. Each shipping container that is matched in the field eliminates two empty one-way trips for that container resulting in:

- Decreased emissions of GHG and criteria pollutants
- Reduced traffic congestion on highways and local roads
- Decreased truck turn times and idle time at port terminals
- Reduced cost to importers, exporters, and trucking providers
- Increased efficiency, throughput and velocity of port terminals, and
- Reduced degradation of roads, bridges and highways

Konnect Kloud proposes to implement this container-matching platform at the Port of Oakland. We estimate that the Port will benefit from at least a 5% reduction, and potentially up to a 10% reduction, in annual empty truck miles based on current Port volume once the platform is fully implemented.

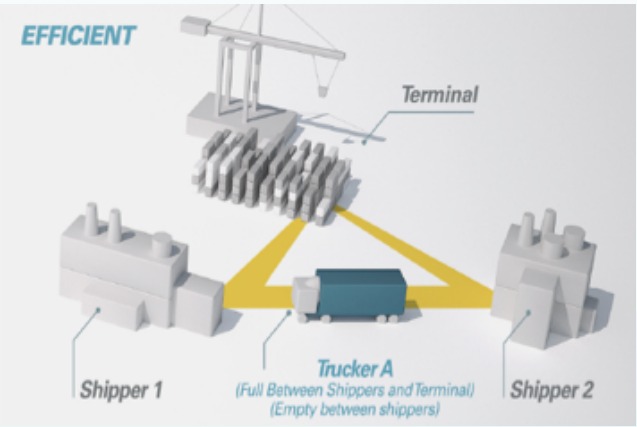

Figure 2: *The Konnect Kloud system matches import and export loads using the same container, eliminating empty one-way trips to and from the port.*

Detailed Description

The intermodal industry is plagued with containers being transported empty for one leg of a delivery. These unnecessary miles, or “empty” miles, result in increased traffic congestion, increased emissions and increased cost to the shipping community. Furthermore, ports are handling a significantly inflated number of containers because of these inefficiencies and surrounding communities are left with the resulting traffic and health impacts.

It is common for the intermodal industry to state that these problems are unavoidable and the cost of doing business. However, by creating a collaborative logistics platform where import shipments leaving East Coast ports are matched with export shipments destined for those same ports the Konnect Kloud system has eliminated 4.5 million empty truck miles from East Coast highways and resulted in substantial diesel emission reductions throughout the region since 2012.

Although there were numerous obstacles to overcome, the Konnect Kloud system has enjoyed tremendous success matching import and export shipments on the East Coast by creating a network of 30 importers and 56 exporters who participate in a robust container-matching program.

To date, no such system has been successfully deployed at major West Coast ports.

Current technologies combined with industry knowledge and a proven track record have given Konnect Kloud the tools and expertise necessary to deploy a container matching platform in California that will allow for a dramatic increase in the environmentally friendly repositioning of empty import containers with export ready shipments.

Konnect Kloud believes that the Port of Oakland is the ideal location for the launch of this platform which will be designated as Konnect Kloud 2.0 for several reasons:

- The geographic proximity of import distribution centers to major export hubs in the Central Valley make this region ideal for a container matching program.
- The large annual container volume at the Port of Oakland provides a sufficient amount of containers to support a robust container matching program.
- The balance of import shipments with agricultural and commodity exports transitioning through the Port of Oakland provide ample opportunity for import-export shipment coordination.
- Congestion problems at the Port of Oakland have led to urgent calls from port custumers and service providers for increased efficiency at the Port.
- Health impacts from truck emissions at the Port of Oakland have led to urgent calls from local residents and communities for further emission reductions from Port activities.
- Initial discussions between Konnect Kloud and the Port of Oakland, local trucking providers, and import and export customers of the Port indicate a very high level of interest in participating in a container-matching program.

A successful container-matching program is built on the premise that an ecosystem must be created in which all parties understand that they have something to gain by participating in a container-matching program. Import and export shippers enjoy an economic savings created by efficient transport of their goods while truckers receive increased revenue for every fully loaded round-trip. However, a successful program must be operated in a manner that is easy to use and complements existing goods movement processes within the supply chain.

The process is based on data, communication and a cloud based infrastructure that allows for the easy exchange of information and shipment details. The first step of the process involves the development of an import shipper generated table of incoming goods. Import shippers rely on various proprietary systems for tracking and distribution of their goods; therefore, it is imperative for their data to be standardized to create an easily searchable inventory of future empty containers.

Once an inventory has been established, an intermodal load board can be created that allows both truckers and exporters to view an inventory of available containers in the field. Factors that must be considered in this process are importer destination, exporter origin, container size and steamship line ownership, available trucker hours and fuel cost. These factors are combined to create suggested truck movement options for shippers and truckers.

Export shippers can then submit a request to utilize an empty container in the field. Because of the established practices of the shipping community it important to provide a communication tool for shippers to negotiate pricing directly with truckers to determine the cost of moving a container back to port. Alternatively, this process can also be initiated by a trucker heading to port with a full load. The trucker can communicate with an import shipper via the load board communication tools to inquire if they have an import load that is scheduled to come to their distribution center. The result in either case is the trucker is able to stay loaded for both legs of the trip.

A reservation system must be developed for the container-matching process to be seamless. Specifically, a shipper states the time of pick up, places of origin and destination, equipment size and ownership and weight and movement price. Truckers then request the shipments they are interested in through Konnect Kloud. A reservation is made once the details have been agreed to by all parties.

The final step is pick up and delivery of goods, which is executed through collaborative logistics. It is crucial for the many stakeholders involved in the transaction to quickly gain access to information through a trusted closed network and make decisions with all parties involved. Konnect Kloud provides trucker details, load information, route logs, transport orders and electronic delivery receipts with technology commonly used in social media to allow the execution of the move in a secure environment.

Detailed Description: Case Study

To illustrate the effectiveness of the Konnect Kloud container matching system, Konnect Kloud collected case study data on every shipment received at two major retail import distribution centers where the import container was successfully matched with an export load. This data was collected over approximately a one year period from 2014 to 2015.

The case study found that two uncoordinated truck round-trips (one round-trip to deliver a full import container to a distribution center and one round-trip to deliver a full export container to port) averaged a total of 1,254 miles.

By using the Konnect Kloud process where the empty import container was matched in the field with a full export shipment, the average trip total was reduced to 717 miles and utilized one truck instead of two. In aggregate, a total of 216,000 empty miles were removed from the supply chain through successful container-matching over this period.

The following table demonstrates an estimate of the substantial environmental benefit that resulted from this 216,296 mile reduction in VMT.

Environmental Benefits--216,296 VMT Reduced

CO2 (lbs.)	NOx (lbs.)
841,823	3,146

Emission Reduction Estimates are Based on the Current Average Model Year of California's Drayage Truck Fleet

Estimated Cost for Implementation

The estimated cost for a pilot program at the Port of Oakland will be $7 million over the three-year pilot program timeline. This figure includes a proposed $1 million budget for direct incentives to drayage trucking service providers to attract early adopters into the container matching pilot program. Konnect Kloud proposes offering drayage trucking service providers an incentive of $100 for every round-trip where an import shipment is successfully matched with an export shipment. The $1 million in incentive money would be offered on a first-come, first-served basis and would provide funding to incentivize 10,000 container-match transactions.

- Year One--$4,000,000
  Programming and Implementation of Konnect Kloud Version 2.0
  Staff and Employee Compensation
  Code and IT Maintenance and Refinement
  CARB Trucker Incentive Program-suggested amount $1,000,000

- Year Two--$2,000,000

  Implementation of Konnect Kloud Version 2.0
  Staff and Employee Compensation
  Code and IT Maintenance and Refinement
  Programming of Konnect Kloud Version 3.0

- Year Three--$1,000,000

  Implementation of Konnect Kloud Version 3.0
  Staffing and Employee Compensation
  Code and IT Maintenance and Refinement

After the three year pilot program, Konnect Kloud will be a self-sustaining company that projects to eliminate a 5-10% annual reduction in empty truck miles based on current Port of Oakland volume once the platform is fully implemented.

Detailed Year One Timeline

Month 1-3—Programming for Version 2.0
Programming & Development Customization of Konnect Kloud Modules for Port of Oakland

- Dispatch Rebuild for Konnect Kloud
- "Where is my Box?"—GPS Enabled Transport Orders
- Oakland-Specific Interface
- VIN Search Interface
- Payment System—Accounts Receivable for Truckers
- Proactive Chassis Payment System
- Turnbox Feature—Steamship Line Interface for Quick Street Turn
- Smart Phone Rebuild

Month 1-3—Marketing Outreach and Data
Secure Pilot Program Participants and Data Participation
- Outreach to Key Players and Identification of Data Needs

- 20 Trucking Companies and Dispatchers
- 30 Import Distribution Centers
- 30 Export Loading Facilities
- Existing Port Virtual Container Yard Data

Month 1-3—Receivables

- Solidify Financial Institution Partner

Month 3-6—Testing

- Testing of V1 Container Inventory Search
- Testing of V2 Add Ons
- Testing of Accounts Receivable Process
- Testing of Port of Oakland Interface
- Testing of Incentive Payment Process
- Testing of Steamship Line Interface

Month 10-12

- Begin Build of Version 3.0

Measurement

Konnect Kloud's process automatically records the inventory of containers that are available to be street turned. Containers are then tracked two separate ways to ensure data integrity. The first measurement is recorded when a steamship line approves a container load match. The steamship line maintains a history of when a container has been in-gated and out-gated and the container's destination. The second measurement is recorded through an interface between the Port of Oakland and Konnect Kloud. The Port history details if containers were full or empty upon leaving and returning to Port. Both provide a historical record that can be compared for final verification of whether a container load match was made. These two methods will provide real time information as to the time and volume of container load matches occurring in the field which can be immediately reported to CARB and CalTrans for verification and analysis.

Interagency Partners

Air Resources Board

- Access to STEP data in order to track which trucks are participating in the container load match process
- Interface between Konnect Kloud and ARB to provide real time accurate updates to shippers and truckers of emissions savings
- CARB Incentive Package of $1,000,000 to attract truckers to the container matching program-suggested payment of $100 to each trucker who successfully executes and records a container load match
- Feedback and involvement in the process

CalTrans

- Data of current trends of trucker movement
- Incorporation of real time data of current traffic movement through Intelligent Transportation Systems
- Collection and review of program outputs including metrics such as VMT reduction, congestion reduction, reduced highway degradation, etc.
- Feedback as to the usefulness of a coordinated approach between I-80 SMART Corridor project and Konnect Kloud (Version 3.0)
- Feedback and involvement in the process

Port of Oakland

- Support of a Virtual Container Yard
- Consideration of a “Green” Lane for active street turn users
- Feedback regarding success and needed improvement of the street turn program
- Liaison to potential shipping and trucking partners
- Consideration of Konnect Kloud integration with an inland container yard
- Thoughts and suggestions for Version 3.0
- Feedback and involvement in the process
- Port specific traffic flow reports
- Validation of full/empty containers
- Congestion relief strategies for Konnect Kloud development

Conclusion

Matching importer and exporter cargo movements can be accomplished once the right tools, personnel, technology, and incentives are in place. Container matching is not a myth. It can and will be accomplished with the help of interagency partners and user adoption by existing stakeholders.

At the end of a three year pilot, we estimate that the Port of Oakland will benefit from at least a 5% reduction, and potentially up to a 10% reduction, in annual empty truck miles once Konnect Kloud is fully implemented. Konnect Kloud is excited about the opportunity to partner with the State of California to reduce emissions and increase the efficiency of the state’s freight system.